GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. SEMESTER : V

CHEMICAL TECHNOLOGY

Subject Name: Polymeric Materials
Subject Code: 153610

Teaching Scheme				Evaluation Scheme			
Theory	**Tutorial**	**Practical**	**Total**	**University Exam(E)**	**University Exam(P)**	**Mid Sem Exam(Theory) (M)**	**Practical (Internal)**
4	0	2	6	70	0	30	50

Sr. No.	Course contents
01.	Historical Developments in polymeric materials and end use sectors.
02.	Physical behavior of polymers in comparison to small molecular compounds in terms of molecular weight and distribution, glass transition temperature, solubility etc. Bulk, solution, suspension and emulsion polymerization processes and engineering problems associated with these techniques
03.	Basic characteristics of addition and condensation polymerization, ionic polymerization, copolymerization.
04.	Chemistry of Natural latex, latex collection and purification, Chemistry of other important rubbers such as Neoprene, Butyl rubber , Synthetic rubber. Vulcanization of rubber.
05.	Manufacturing of thermoset polymers such as Phenolic resins, Amino resins and epoxy resins

Reference Books:

1. Plastics : Materials & Processing, A Brent Strong, Prentice Hall, 1996
2. Text book of Polymer Science , Billmeyers, ,John Wiley & Sons 1984.
3. Encyclopedia of Polymer Science & Technology, John Wiley & Sons, Inc 1965
4. Encyclopedia of Polymer Science & Engineering, John Wiley & Sons, Inc 1988.
5. Polymer Chemistry Oxford University Press, Malcolm P. Stevens, Inc, 1990
6. Introduction to Polymer Science & Technology H.S.Kaufman & J.J.Falcetta, Wiley – Interscience Publication, 1977
7. Handbook of Polyethylene, A.J.Peacock, Marcel Dakker Inc, 2000
8. PVC Technology, A.S.Athalye & Prakash Trivedi, Multi-Tech Publishing Co, 1994
9. Engineering Thermoplastics Polycarbonates Polyacetals Cellulose Esters, L. Bottenbruch, Hanser Publishers, 1996
10. Composite Polymeric Material, R.P.Sheldon, Applied Science Publishers, 1982
11. Composites: Design Guide, Industrial Press Inc, 1987.
12. Composite Material Handbook, M.M.Schwartz, McGraw-Hill company, 1984
13. Biopolymers, Wiley,VCH Verlag, 2003
14. Handbook of Thermoplastics, O.Olabisi, Marcel Dekker, 1997.
15. Plastics Materials, Butterworth Scientific, J.A.Brydson, 2006
16. Polymer chemistry, Seymour & Carraher, Marcel Dekker, 2003

17. Their Chemistry & Chemical Engg. Brage Golding, Polymer & Resins, D.Van Nostran Company Inc, 1959
18. Structures of Cellulose, American Chemical society, Atlla, 2003
19. Styrene Based Plastics & their Modifications Svec, Ellis Harwood,1991
20. Handbook of Rubber Technology, S Blow, Galgotia Publications Pvt. Ltd, 1998
21. Rubber Technology, Morell S H, Applied Science Publication, 1981
22. Plastics and Rubber, E W Duck, Butterworth, 1971
23. Tyre and Vehical Dynamics, Hans B Pacejka, SAE International, 2nd Ed, 2005
24. Introduction to Rubber Technology, Andrew Ciesielski,RAPRA Publications, 2000
25. Rubber Technology, Maurice Morton, Springer, 1st Ed, 1987
26. The Science and Technology of Rubber, Mark and Erman, Academic Press,3rd Ed,2005
27. Rubber Processing, Robert Johnson, Hanser Publications, 2001
28. Rubber Compounding, Barlow, CRC Press, 2nd Ed, 1993
29. Rubber Compounding : Chemistry and Applications , Brendan Rodgers, CRC, 1st Ed, 2004
30. Rubber Compounding 2E: Compounding and Testing for Performance, John Dick, Hanser Publications, 1st Ed.,2009
31. The Mixing of Rubber, R F Grossman, Springer, 1st Ed.,1997